INVESTIGATING THE ROLE OF PARENTING IN THE LINK BETWEEN SOCIAL ANXIETY AND COPING-RELATED DRINKING MOTIVES AMONG ADOLESCENTS

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Thesis Prepared for the Degree of

MASTER OF SCIENCE

UNIVERSITY OF NORTH TEXAS

August 2021

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Ramadan, Banan. *Investigating the Role of Parenting in the Link between Social Anxiety and Coping-Related Drinking Motives among Adolescents*. Master of Science (Psychology), August 2021, 64 pp., 2 tables, 4 figures, 2 appendices, references, 245 titles.

Elevated social anxiety is a well-documented risk factor for developing problematic alcohol use behaviors. Adolescents with high social anxiety often report drinking for coping-related reasons, and drinking to cope has been linked to both acute and chronic alcohol use problems. Research further suggests that parenting is a primary socialization domain in terms of adolescent alcohol use onset and trajectory; however, no work has yet examined the role of parenting factors in the relation between social anxiety and coping motives for drinking. The current study investigated the role of two parenting dimensions, rejection/warmth and psychological control, on the link between social anxiety and problematic drinking motives. Drawing from an ongoing assessment of an inpatient program, the sample consisted of 94 girls and boys (ages 11-17 years). Regression analyses evaluated main effects of social anxiety, rejection, psychological control, the interactive effects of the parenting dimensions, and the three-way interaction of both parenting dimensions with social anxiety on coping motives for alcohol use. As expected, social anxiety was positively and statistically significantly related to coping motives when examined via raw scores, proportional values, and in the final model. Further, zero-order correlations indicated a positive, statistically significant relation between proportional coping motives and both rejection and psychological control; however, no other hypothesis was supported. Collectively, this body of work underscores the potential benefit of integrating social stress and anxiety management in problematic alcohol use intervention efforts, as well as drinking motive education in efforts targeting social anxiety.

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CHAPTER 1

INTRODUCTION

Social anxiety is the most common anxiety disorder in adolescence (Wittchen & Fehm, 2001). Studies have shown adolescents with social anxiety are less liked and experience more negative treatment from their peers than adolescents without social anxiety (Verduin & Kendall, 2008). Adolescence is not only a developmentally sensitive time to develop social skills, but is also a period of high risk exposure to alcohol use. Most people in the United States report experimenting with alcohol during adolescence (Miech et al., 2017; Newes-Adeyi et al., 2005). Importantly, the progression from initiating use to developing alcohol use problems is quicker in adolescence as compared to adulthood (Deas et al., 2000; Wittchen et al., 2008). Socially anxious adolescents are at particular risk for engaging in coping-motivated drinking and developing alcohol use problems (e.g., Blumenthal et al., 2010); however, limited research investigates possible factors that may influence this relation. Several aspects of parental behaviors and the parent-offspring relationship are linked with adolescent alcohol use (e.g., Ryan et al., 2010); however, limited research has investigated the potential links among key dimensions of parenting (e.g., parental rejection/warmth, psychological control) and alcohol use behaviors, and none have examined whether these factors influence the relation between social anxiety and coping-related drinking motives.

Adolescent Alcohol Use: Developmental Landscape and Common Correlates

Adolescent alcohol use is associated with a wide range of negative consequences, including increased likelihood of motor vehicle accidents (Bingham et al., 2009), risky sexual behavior (Graves, 1995), violent behavior (Komro et al., 2000), cognitive impairment (Hanson et al., 2011), and school failure (Zucker et al., 2008). Despite established risk and concerted

prevention efforts (e.g., D'Amico & Fromme, 2002; Harding et al., 2016), adolescent alcohol use remains common in the United States. For example, data from the Monitoring the Future Study, an ongoing national, longitudinal study, found that 27% of 8th graders, 50% of 10th graders, and 64% of 12th graders reported past year alcohol consumption (Patrick & Schulenberg, 2014). In terms of binge drinking (i.e., having five or more drinks in a row), 6% of 8th graders, 15% of 10th graders, and 22% of 12th graders reported binge drinking in the past 2 weeks. Findings also indicated that approximately 10% of 12th graders have consumed 10 or more drinks in a row (Patrick et al., 2013). Of note, heavy consumption (e.g., frequent binge drinking) is not only associated with increased morbidity and mortality risk during adolescence, but also later in life. For instance, in a 20-year follow-up assessment (n = 893) of a cohort study initially including almost 50,000 Swedish young men who were enlisted for compulsory military service (18-20 years old), researchers found that not only did alcohol abstainers have higher survival rates than moderate or heavy drinkers, but the data indicated that heavy drinkers were at almost 3 times greater risk for death due to alcohol-specific causes 20 years later compared to moderate drinkers (Andréasson et al., 1991). Further, suicide and probable suicide were the leading causes of death recorded in study (35.8%), and heavy drinkers were 4.1 times more at risk for suicide compared to moderate drinkers.

Alcohol use in adolescence further differs from adult use in several important ways (Windle et al., 2009). Compared with adults, underage drinkers typically drink on fewer occasions, but consume more alcohol when they do drink (Johnston et al., 2009). Indeed, data indicate that it is more common for adolescents to report binge drinking on more than one occasion than only once in the past 2 weeks (Patrick & Schulenberg, 2010). Animal research demonstrates that non-human adolescents experience less motor disruption and are more

sensitive to social facilitation than adults following alcohol administration (Spear & Varlinskaya, 2005; Varlinskaya & Spear, 2002), and one study conducted with humans found that boys (ages 8-15 years) showed no behavioral signs of intoxication after receiving a dose of ethanol that produced clear intoxicating effects among adults (Behar et al., 1983). Furthermore, while adolescents are less likely to report withdrawal symptoms than adults (Martin et al., 1995), large national surveys indicate that alcohol use disorder prevalence and incidence peak during late adolescence and emerging adulthood across gender and racial categories (Substance Abuse & Mental Health Services Administration, 2015). Notably, data indicate that adolescents progress more rapidly from experimentation to problematic drinking behaviors than adults (e.g., Chen & Kandel, 1995), and an earlier age of alcohol dependence has been linked to the persistence of an alcohol use disorder later in life (Windle et al., 2005). For instance, examining data collected in the National Longitudinal Alcohol Epidemiologic Survey, Grant and Dawson (1997) report that adolescents who began drinking alcohol before age 15 were four times more likely to become alcohol dependent later in life than those who did not drink alcohol before age 21. They also found the probability of subsequently developing alcohol dependence decreased by 14% with each increasing year of age of initiation. Together, the developmental nature of alcohol use and related problems marks adolescence a key period to investigate the equifinality and multifinality of alcohol use behaviors.

Several models have focused on sociodemographic factors in relation to the onset of adolescent alcohol use and related problems (Petraitis, Flay, & Miller, 1995), such as gender (Schulte et al., 2009), race/ethnicity (Griffin et al., 2000), and pubertal status/timing (Kaltiala-Heino et al., 2011). Historically, data have highlighted higher rates of alcohol use among boys as compared to girls; however, newer data suggest that this gender gap is no longer present (e.g.,

Center for Disease Control and Prevention, 2016; Johnston et al., 2008). Indeed, alcohol use among adolescent girls has significantly increased over the past 30 years (Perou et al., 2013; Dakof, 2000), and some studies suggest girls may be at a greater risk for severe problems from drinking, such as dependence and withdrawal symptoms (Stewart & Brown, 1995; Becker, Perry, & Westenbroek, 2012).

Several studies, including national surveys, have identified racial/ethnic differences in alcohol consumption among adolescents (Substance Abuse & Mental Health Services Administration, 2010; Wallace et al., 2003). For example, data from a large, national survey suggested that among 8th graders, Hispanic adolescents reported a greater rate of past-year alcohol consumption than White and African American/Black adolescents; however, in 12th grade, White adolescents reported the highest past-year consumption rates across these racial/ethnic groups (Patrick & Schulenberg, 2014). Undeniably, the racial/ethnic disparity in alcohol use is complex. For example, although African American/Black adults typically report lower alcohol consumption, they also evidence more problematic alcohol-related consequences than their White counterparts (Chartier & Caetano, 2010; Tamika et al., 2013). Conversely, data indicate that White *youth* drink more frequently, suffer from alcohol use disorders, binge drinking, and risky sexual and driving behaviors while under the influence more than youth in any other racial/ethnic group (Weaver et al., 2011; Windle & Windle, 2005). Cultural influences such as attitudes towards drinking and drunkenness (Gardner et al., 2018; Caetano & Clark, 1999), as well as acculturative stress (Pittman et al., 2019) may play a role in these perplexing alcohol use disparities.

Lastly, both cross-sectional and longitudinal studies demonstrate a link between pubertal status, and pubertal timing more specifically, and alcohol use among adolescent girls and boys

(Aro & Taipale, 1987; Patton et al., 2004; Costello et al., 2007). For instance, in a four-wave study conducted with 430 Danish girls (M_{age}=12.17 years at baseline), age of menarche was positively correlated with age of alcohol use initiation; specifically, younger age at menarche emerged as a risk factor for onset of alcohol use prior to age 15 years (Verhoef et al., 2014). In another study of adolescent twin girls, both between- and targeted within-family analyses indicated that that early menarche was associated with earlier initiation, as well as greater frequency of drinking (Dick et al., 2000). Although the literature is much smaller and less consistent, among adolescent boys a similar pattern does emerge. For example, one longitudinal study of 3,862 Norwegian high school students found that boys who were categorized as early developers reported being intoxicated more often than their classmates (Wichstrøm, 2001). Together, this body of work has aided in understanding the sociodemographic landscape of adolescent alcohol use and related risk; however, there remains a critical need to identify and test malleable factors amenable to intervention.

Several promising correlates of adolescent drinking have been identified, including transdiagnostic individual difference factors (i.e., factors that cut across multiple diagnostic categories; Eaton et al., 2015), more proximal aspects of cognition and experience (e.g., use expectancies; Cranford et al., 2010), as well as psychological/behavioral symptom clusters (e.g., anxiety-type problems; Blumenthal et al., 2011). First, temperamental factors such as the proclivity to experience negative affect (e.g., Myers et al., 2003) and high levels of impulsivity have been consistently associated with adolescent drinking (e.g., Colder & Chassin, 1997). A growing literature has further linked anxiety sensitivity (i.e., distress elicited by the symptoms of anxiety) to adolescent alcohol use and alcohol problems (Wolitzky-Taylor et al., 2015). For instance, one study of older adolescents/young adults (ages 16-24 years) found that higher

anxiety sensitivity was associated with the development of an alcohol use disorder two years later (Schmidt et al., 2007). High sensation seeking is another consistent risk factor for adolescent alcohol use (Comeau et al., 2001). A study conducted with 315 high-school students found that the tendency towards sensation seeking was positively correlated with alcohol use, and binge drinking in particular (Pérez-Fuentes et al., 2019). Collectively, this work has supported the development of selective, personality-targeted intervention programs (i.e., programs targeting individuals high on identified risk factors; e.g., *PreVenture*; Conrod et al., 2010) which have shown great promise in reducing adolescent alcohol use, binge drinking, and alcohol-related negative consequences (Newton et al., 2016).

In a separate but related line of work, the key role of more proximal cognitive factors such as alcohol use expectancies (e.g., Gibbons & Gerrard, 1995; Oei & Baldwin, 1994) and motives for use (Cox & Klinger, 1988; Kuntsche et al., 2010) have been highlighted. Alcohol expectancies are an individual's belief about what will happen once they drink alcohol, while drinking motives describe their motivation to drink in order attain specific effects from alcohol (Cox & Klinger, 2004). Positive alcohol expectancies increase with age, and most of the increase is seen in childhood, well before initiation (Miller et al., 1990). While positive alcohol expectancies in early adolescence are predictive of larger increases in alcohol use later in adolescence (Clark et al., 2011), expectancies primarily effect drinking indirectly by shaping drinking motives (Kuntsche et al., 2007, 2010). Indeed, alcohol expectancies may be more relevant among adolescents who have yet to start drinking, and drinking motives more relevant among adolescents who have begun to develop habitual drinking patterns (Kuntsche et al., 2010). Cooper's (1994) four-factor model of drinking motives established four primary motive types: coping motives (i.e., drinking to forget your worries); enhancement motives (i.e., drinking

because it's fun), social motives (i.e., drinking to be sociable), and conformity motives (i.e., drinking to fit in). Across studies, enhancement and coping motives are the primary motives linked to elevated adolescent alcohol use (e.g., Cooper et al., 2016; Kuntsche et al., 2008). Coping motives specifically are of critical interest due to their association with problematic drinking, alcohol-related problems, and long-term consequences (Cooper, 1994; Cooper et al., 2016; Merrill et al., 2014). Among adolescents, endorsing higher coping motives is linked with heavier drinking, as well as more violent behaviors, such as bullying and fighting (Kuntsche et al., 2007). For example, in a sample of adolescents, coping motives significantly predicted binge drinking at both baseline and 6-month follow-up assessments (Smit et al., 2020). Additionally, in a sample of college students, elevated coping motives were associated with more alcohol-related problems, such as "not being able to do homework or study for a test" (Corbin et al., 2013).

Finally, both externalizing (e.g., outward and observable expressions of emotional dysregulation, such as aggressiveness) and internalizing (e.g., inward and self-directed expressions of emotional dysregulation, such as withdrawal) behaviors, symptom clusters, and disorders have been linked to alcohol use and related problems among adolescents (Clark & Bukstein, 1998; Fite, Colder, & O'Connor, 2006). For example, a large, longitudinal study conducted in Finland (N = 6,349) found that externalizing problems broadly preceded alcohol use initiation among both boys and girls (Miettunen et al., 2014). Further, children diagnosed with attention-deficit hyperactivity disorder, childhood oppositional defiant disorder, or conduct disorder evidence increased risk for elevated alcohol use and the onset of dependence and alcohol use disorders during adolescence (Molina & Pelham, 2003; Clark et al., 1999; Caspi et al., 1996). Indeed, the majority of this literature has focused on links with externalizing-type problems; however, a growing body of work emphasizes a link to internalizing problems as well

(Pellerone et al., 2016). The literature on the link between internalizing symptoms and adolescent alcohol use is smaller and less consistent than the work on externalizing symptoms (e.g., Colder et al., 2010; Edwards et al., 2014); however, studies focused on specific symptom clusters have identified more consistent patterns (Hussong et al., 2011). For example, while generalized anxiety and separation anxiety specifically evidence no or negative relations to alcohol use problems (Dyer et al., 2019; Kaplow et al., 2001), other symptom clusters, such as panic and social anxiety, have been consistently positively linked to alcohol-related problems including dependence (Zimmermann et al., 2003). Across clinical (Cosci et al., 2007), community-recruited (Mathew et al., 2011), and large representative samples (Bernstein et al., 2006), those who reported a history of panic attacks also reported significantly higher harmful alcohol use than those who reported no panic attack history. Finally, social anxiety represents a key, developmentally relevant risk factor that has garnered burgeoning attention given consistent links with problematic alcohol use identified across adult, adolescent, community, and clinical samples (Blumenthal et al., 2011; Torvik et al., 2019).

Social Anxiety: Description and Relation to Alcohol Use

Social anxiety is defined as the excessive fear of humiliation or negative evaluation by others in social or performative situations (Heimberg et al., 2014). Individuals with elevated social anxiety may avoid social situations or experience them with severe discomfort; physical symptoms may include blushing, shaking, nausea, or panic-like symptoms (American Psychiatric Association [APA], 2013). Avoidance behaviors that disrupt daily functioning distinguish elevated social anxiety symptoms from a social anxiety disorder diagnosis, although elevated symptoms also can be extremely distressing and are associated with many of the problematic correlates of a clinical diagnosis (e.g., self-reported loneliness and school avoidance; Weeks et

al., 2009). Further, unlike adults, adolescents may not have the same opportunities to avoid anxiety-provoking places or situations, and as a result, social development and school performance may be severely affected, and they may engage in school refusal and/or refusal to engage in other social activities (APA, 1994).

Social anxiety disorder has an estimated lifetime prevalence rate of 5-15% among adolescents (Heimberg et al., 2000; Merikangas et al., 2009) and 12-14% among adults (Kessler et al., 2012; Wittchen & Fehm, 2001). Although there is a normative rise in social evaluative fears during adolescence due to the increasing importance of peer relationships (Ingersoll, 1989) and cognitive characteristics such as the imaginary audience (Elkind & Bowen, 1979), incidence of problematic social anxiety symptoms and social anxiety disorder also peak during this time (Beesdo et al., 2007). Indeed, the average age of symptom onset is 14 years (Lijster et al., 2017), and an earlier age of onset is linked to greater persistence of social anxiety disorder (Beesdo-Bum et al., 2012). Social anxiety disorder is unlikely to remit without treatment (Davidson et al., 1993), yet unfortunately, it often remains undiagnosed, largely due to the impairing qualities of the disorder (Schneier, 2003). In fact, one study found that among those who sought treatment, the average time between the onset of symptoms and their first treatment experience was 15 years (Ertekin, 2015).

According to the cognitive-behavioral model, individuals who experience social anxiety allocate much of their mental resources and attention towards their perceived self-image and rely on interoceptive cues (e.g., pounding heartbeat, shaking) to assess how well a social situation is going (Clark & Wells, 1995). Socially anxious individuals often hold highly negative appraisals of their own performance, assume that other people are also naturally critical and likely to judge them negatively (Leary, Kowalski & Campbell, 1988), and are overly concerned with being liked

by others and regarded highly, which intensifies the evaluation (Rapee & Heimberg, 1997; Heimberg et al., 2014). Socially anxious individuals also may come to rely upon the use of safety behaviors (e.g., avoiding eye contact, holding a cup tightly to prevent shaking; Baillie & Sannibale, 2007), which maintain socially anxious beliefs, impair social performance, and may be partly responsible for unfavorable responses by others (Stangier et al., 2006). This model also suggests that socially anxious individuals engage in maladaptive post-event processing, where they appraise the social situation afterwards and ruminate on negative self-cognitions and failures. In turn, this exacerbates their negative cognitions and results in a distressing cycle of social anxiety (Rachman et al., 2000).

In addition to the direct effects of elevated social anxiety (e.g., avoidance of feared situations), social anxiety symptoms in adolescence are correlated with additional difficulties such as low self-esteem (van Tuijl et al., 2014), dysregulated emotion expression (Klemanski et al., 2017), lower academic achievement (Brook & Willoughby, 2015), unsatisfactory relationships, and employment issues (Schneier et al., 1994). Furthermore, social anxiety disorder is the most common comorbid anxiety disorder among individuals diagnosed with depression (Heeren, Jones, & McNally, 2018; Pini et al., 1997). In fact, social anxiety disorder in adolescence has been identified as a key risk factor for subsequent depression during early adulthood (Stein et al., 2001). Although social anxiety disorder presents independent risk for suicidal ideation and attempts, social anxiety in combination with depression further increases the likelihood for attempting suicide (Sareen et al., 2005).

One of the most common and problematic correlates of elevated social anxiety and social anxiety disorder is risk-related alcohol use (Morris et al., 2005). A large and consistent literature demonstrates the link between elevated social anxiety symptoms and alcohol problems (Schry &

White, 2013). Furthermore, data from a large national sample indicated that social anxiety disorder was not only associated with increased risk for an alcohol use disorder, but also that social anxiety disorder preceded alcohol use disorder in 80% of co-occurring cases, and concurrent alcohol and social anxiety disorder diagnoses were associated with more severe alcohol disorders (Schneier et al., 2010). Similarly, Buckner and colleagues (2008) found that in a community-recruited sample, adolescents with a social anxiety disorder were more likely to develop alcohol dependence 14 years later as compared to adolescents without a social anxiety diagnosis. Finally, in a large sample of adolescents (ages 12-18 years at baseline) recruited from treatment programs as well as the local community, Black and colleagues (2015) also found that those with a history of social anxiety disorder were twice as likely to report severe alcohol use disorder symptoms at age 25 than those without a history of social anxiety disorder. Despite consistent findings regarding risk for problematic alcohol use behaviors and more negative alcohol-related consequences (Blumenthal et al., 2011; Lewis et al., 2008), there is considerable variation in the literature regarding frequency of alcohol use among individuals higher in social anxiety (e.g., Blumenthal et al., 2010; Myers et al., 2003). This suggests that additional risk-factors facilitate the co-occurrence.

In accordance with the self-medication theory (Khantzian, 1985) and more contemporary biopsychosocial models (Buckner et al., 2013), socially anxious individuals may drink to reduce the effects of social anxiety, and as a result develop a proclivity toward coping-motivated alcohol consumption. Studies among both community and clinical samples have identified coping motives as a primary pathway through which socially anxious individuals may develop hazardous drinking patterns (Raj et al., 2016; Stewart et al., 2006). In fact, one study among college students found that drinking *due to* social anxiety (i.e., “I drank so I did not have to think

about what impression I made on others") accounted for a significant portion of the link between social anxiety and problematic alcohol use (Cludius et al., 2013). Further, Windle & Windle (2012) found that social anxiety disorder among adolescents uniquely predicted elevated coping motives later in young adulthood (and not social or enhancement motives), even with several important covariates included in the models (e.g., other anxiety and mood diagnoses; motives at baseline). Additionally, a series of studies conducted by Blumenthal and colleagues (2010, 2016, in press) support the specificity of the relation between social anxiety symptoms and coping motives during adolescence. Critically, in addition to correlations among retrospectively reported social anxiety and coping motives, social anxiety was also associated with an increased desire to drink following introduction to a novel social environment (Blumenthal et al., 2016) as well as heightened relief expectancies (i.e., alcohol 'would make me feel better') following laboratory-induced social stress (Blumenthal et al., in press). Together, a growing and largely consistent literature indicates that social anxiety is linked to alcohol problems, and this link is primarily driven by coping-related motives; however, little is known about factors that may affect the strength and nature of this relation (Ham et al., 2009).

Parental Behavior, Style, and (Adolescent) Offspring Alcohol Use

Research suggests that parenting is a primary socialization domain in terms of adolescent alcohol use onset and trajectory (Alati et al., 2014; Maccoby & Martin, 1983). Several aspects of parental behaviors and the parent-offspring relationship are linked with adolescent alcohol use, such as parent drinking frequency (Hawkins et al., 1997), parents' attitudes towards alcohol use (Thompson & Wilsnick, 1987), parental monitoring (Patterson, DeBaryshe & Ramsey, 1989), and availability of alcohol in the home (Komro et al., 2007). Furthermore, the quality of the parent-child relationship also plays a role in alcohol use onset and trajectory (Ryan et al., 2010;

Gutman et al., 2011). For example, adolescents who report a negative relationship with their parents (i.e., not feeling loved, supported, comfortable, or treated fairly) also report more life-time alcohol use, more recent alcohol use, and more frequent binge drinking than adolescents who report a positive relationship with their parents (Mathijssen et al., 2014). More specific dimensions of parenting that may have particular relevance to adolescent alcohol use are parental rejection/warmth (e.g., support, responsiveness; Visser et al., 2013) and psychological control (e.g., guilt-induction, conditional approval; van der Vorst et al., 2006).

In terms of parental rejection/warmth, the literature reflects a mixed relation with early use indices such as alcohol initiation and drinking frequency. For example, in a sample of over 700 Spanish adolescents (ages 12-16 years), Tur-Porcar and colleagues (2019) found that parental rejection was positively related to alcohol use frequency. Further, a meta-analysis of longitudinal studies found that higher levels of parental support (characterized by warmth and acceptance) were associated with delayed alcohol use initiation (Yap et al., 2017). Findings also indicated that higher levels of parental support were associated with lower levels of drinking frequency and misuse, although follow-up time interval served as a moderator, such that studies with a longer interval reported smaller effect sizes. In contrast, a cross-sectional analysis of adolescent data from the Australian Temperament Project found that parental rejection/warmth was not significantly related to substance (including alcohol) use frequency (Letcher et al., in press). Data regarding the link between parental rejection/warmth and binge drinking have been more consistent. For example, a study of over 2000 Russian adolescents (ages 13-17 years) found that girls who reported the highest levels of parental warmth were significantly less likely to report binge drinking (Stickley et al., 2013). Data drawn from the first two waves of the National Longitudinal Study of Adolescent to Adult Health (Add Health; Bearman, Jones, &

Udry, 1997) also present a significant, more nuanced relation between maternal warmth and episodic binge drinking (Guilamo-Ramos, 2004). Specifically, boys who reported moderate-low maternal warmth in 10th grade reported the highest frequency of recent binge drinking in 11th grade (as compared to girls; girls and boys reporting high maternal warmth). Moreover, a study examining over 9,000 adolescent-parent pairs across four waves of Add Health data found that greater parental rejection at baseline was both directly and indirectly associated with elevated binge drinking, among boys and girls, across the follow-up assessments (Donaldson et al., 2016). Finally, although no work has directly examined the unique relation between parental rejection/warmth and coping-motivated alcohol use, studies have identified a relevant link between parental rejection/warmth and coping strategies more broadly. For instance, in a study of 276 German adolescents (ages 14-17 years), Wolfradt and colleagues (2003) found that parental warmth was positively associated with a proclivity toward active, problem-focused coping. Similarly, in a sample of 110 youth age 10-16 years entering a Belgian treatment center for obesity, maternal (but not paternal) rejection was positively associated with both maladaptive coping strategies broadly (e.g., withdrawal, giving up) as well as emotional eating specifically (Vandewalle et al., 2014).

A much smaller literature has examined the link between parental psychological control and offspring alcohol use. In contrast to behavioral control (e.g., the extent to which parents monitor a child and enforce rules), *psychological* control refers to the manipulation of a child's psychological world through behaviors such as guilt-induction and conditional approval (Barber, 1996). Across studies, parental psychological control has been positively related to problematic alcohol use among offspring (e.g., Fischer et al., 2006). For example, Yang and colleagues (2013) examined this relation both cross-sectionally (ages 14-15) and longitudinally (age 10-11

at baseline; 16-17 at follow up) in a sample of over 1,000 youth who took part in the National Longitudinal Survey of Children and Youth (Statistics Canada, n.d.). Findings indicated that parental control was positively related to adolescents' drinking frequency. Similarly, in a longitudinal study of a local sample of adolescents (N = 521), Luk and colleagues (2017) found that maternal, but not paternal, psychological control in grade 7 was positively related to alcohol and cannabis problems in grade 9, even with several additional relevant variables included in the model (e.g., baseline use, parent use, other parenting factors). Lastly, although no work has directly studied the relation between parental psychological control and coping-motivated alcohol use specifically, studies have identified relevant links with coping strategies more broadly (Manzeske & Stright, 2009). One study of sixth and seventh grade students in the U.S. found that higher levels of maternal psychological control were related to higher levels of emotional dysregulation and poor coping with negative emotions (Luebbe et al., 2014). Another study of over 500 Italian adolescents (ages 17-19 years) found that psychological control was positively associated with emotion-oriented coping, avoidance-oriented coping, and alcohol consumption (Inguglia et al., 2020). Notably, they also found an indirect link between psychological control and alcohol consumption through avoidance-oriented coping. Collectively, the literature supports the contention that parental (and particularly maternal) rejection/warmth and psychological control each evidence positive relations with risk-related alcohol use, including risk for coping-motivated drinking; however, it also is important to consider not just unique contributions of these dimensions but also the combination of both (Aunola & Nurmi, 2005).

Indeed, the interaction of multiple parenting dimensions rather than isolated constructs better reflects the complexity of parenting behavior, and thus better predicts offspring adjustment

across numerous indicators (Aunola & Nurmi, 2005; Maccoby & Martin, 1983; Steinberg, 2001). Unfortunately, assessment of both psychological control and rejection/warmth are not commonly found in the substance use literature, and almost no work has addressed these complex relations among adolescents. Schwartz and colleagues (2009) asked college students to retrospectively report on their relationships with their parents during adolescence, finding that parental acceptance (a composite factor that included psychological control, nurturance, connection, and disrespect) was strongly protective against risk-taking behaviors, including driving under the influence of alcohol or drugs. Similarly, a large cross-sectional study of college students (ages 18-25 years) found that parent problems (i.e., a latent variable of psychological control and parent lack of support and connection) was positively associated with alcohol misuse (i.e., a latent variable consisting of binge drinking, frequency of binging, frequency of alcohol consumption, and alcohol related problems) among women but not men (Fischer et al., 2006). In terms of alcohol use motives, one study of 95 young adult women (M_{age} = 21.15 years) found that higher levels of parental 'rejection' (i.e., a variable that resembles a mix of both warmth and psychological control dimensions; e.g., "my mother ridiculed and made fun of me" and "my mother tried to make me feel better when I was hurt or sick") was linked to higher coping motives for drinking, but not social or enhancement motives (Rundell et al., 2012). Finally, in a large sample of Italian adolescents (ages 16-20 years), parent-adolescent bond (a factor comprising three dimensions: warmth, encouragement of autonomy, and psychological autonomy) evidenced an indirect link to drinking quantity among girls through negative relations with each coping, enhancement, and social motives for consumption (Smorti & Guarnieri, 2015). Together, although research suggests that differentiation of parenting dimensions as well as the investigation of distinct combinations is important (Aunola & Nurmi, 2005; Steinberg, 2001),

few studies separate the dimensions of behavioral and psychological control, and none differentiate between the main effects of rejection/warmth, psychological control, and their interaction in relation to alcohol use motives and behaviors.

The Current Study

Adolescent alcohol use is correlated with a breadth of problematic outcomes (Wicki et al., 2018). Consequently, the development of universal, often school-based prevention efforts has received a great deal of attention (e.g., Stigler et al., 2011); yet, results from a number of meta-analyses found that most drug prevention programs have limited to no effects (Foxcroft & Tsertsvadze, 2011). Efforts targeting at-risk adolescents (e.g., those with social anxiety) *and* their parents, focused on specific parenting dimensions (e.g., rejection and psychological control), may be more successful, as parenting often emerges as an amenable point of intervention (Suchman, et al., 2013). The present study sought to investigate whether combinations of the parenting dimensions rejection/warmth and psychological control affected socially anxious adolescents' propensity to drink for coping reasons, the motive most associated with alcohol-related problems. Specifically, the current study drew from an existing dataset of adolescents enrolled in an in-patient, wilderness based treatment program for both internalizing and externalizing issues.

The current study used "rejection" and "warmth" as opposite ends of a continuum. It was expected that there would be statistically significant, positive main effects of rejection, psychological control, and social anxiety on coping motives (hypothesis 1). In terms of two-way interactions, it was expected that high rejection and high psychological control would be associated with the highest endorsement of coping motives, and low rejection and low psychological control associated with the lowest endorsement of coping motives (hypothesis 2).

Further, it was expected that high rejection and high social anxiety would be associated with a higher endorsement of coping motives, and high psychological control and high social anxiety also would be associated with a higher endorsement of coping motives (hypothesis 3).

In terms of the three-way interaction, it was hypothesized that at high levels of rejection and psychological control, there would be a stronger positive association between social anxiety and drinking to cope (hypothesis 4). Finally, given the protective value of parental involvement and support of autonomy (Grolnick, 2003), it was hypothesized that at low levels of rejection and psychological control, there would be a weaker positive association between social anxiety and drinking to cope (hypothesis 5). Evaluation of all remaining two- and three-way combinations were considered in an exploratory manner. Several key demographic variables (i.e., gender (Kuntsche et al., 2015), age (Mezquita et al., 2011), race/ethnicity (Martens et al., 2008), family income (Peirce et al., 1994)) were examined for potential inclusion as covariates in the final model.

CHAPTER 2

METHODS

The available sample consisted of 286 adolescents that completed any of the primary measures as a part of a larger assessment study of adolescents entering Transforming Research into Action to Improve the Lives of Students (TRAILS), a wilderness treatment program in North Carolina, United States. From that sample, 174 participants reported never having an alcoholic drink, and 18 participants did not complete all the primary measures. The final analytic sample included 94 adolescents, ages 11-17 years (M_{age} = 15.73, SD = 1.29; 53.30% girls). The sample included 89.2% adolescents who reported identifying as White/Caucasian, 4.1% Hispanic/Latinx, 1.4% Native American, and 5.4% "Other". The median annual household income, as reported by a parent, was greater than $100,000. Among the parents, 3.2% completed high school or less, 10.6% completed some college, 27.7% earned a college degree, 2.1% completed some graduate school, 16.0% earned a graduate degree (masters), and 19.1% earned a higher graduate degree (M.D., Ph.D., J.D., etc.). Further, 58.5% reported being the primary caretaker, 19.1% reported shared caretaking equally with a partner, and 2.1% reported other, with a reported average of 16.32 hours per week spent with their child. The average number of children under the age of 18 living at home was 1.52, with age of siblings ranging from 3-18 years. Approximately 14% of adolescents were adopted. The average number of prescription psychotropic medications taken by the adolescent was 1.49, ranging from 0-5 medications. Please see Appendix B for additional sample descriptives.

Measures

Demographics Questionnaire- Parent Report

A questionnaire was given to parents with questions regarding the adolescent currently

enrolled in TRAILS. The demographics questionnaire included questions about the adolescent's gender, ethnicity, grade-level, annual family income, parent's marital status, parents' highest level of schooling, and the number of children (under 18) currently living at home.

The Revised Child Anxiety and Depression Scale- Social Phobia Subscale

The Revised Child Anxiety and Depression Scale (RCADS; Choprita et al., 2000) includes a social phobia subscale that was created to assesses dimensions of the *DSM–IV* (and is consistent with *DSM V*) social anxiety disorder among children and adolescents (APA, 1994, 2013). The RCADS social phobia subscale produces a total sum score of nine items such as "I am afraid of looking foolish in front of other people" and "I worry about what other people think of me" on a four-point scale, ranging from 0 *never* to 3 *always*. The RCADS has shown robust internal consistency, reliability, and validity in diverse adolescent samples (Kösters et al., 2015) and clinical samples (Choprita et al., 2000, 2005). The Cronbach's alpha in the current sample was .89.

Child Report on Parental Behavior Inventory- Warmth Subscale

The Child Report on Parental Behavior Inventory (CRPBI; Schuldermann & Schludermann, 1988) includes a warmth/acceptance subscale to assess a child's perception of parental behavior using a 3-point scale to report *not like*, *somewhat like*, or *a lot like* on items such as "my parent makes me feel better after talking over my worries with her" or "believes in showing her love for me." The subscale has 10 items and a possible sum score range of 10–30. Participants report on separate forms for mother and father; the current study examines the maternal warmth subscale specifically. The CRPBI has demonstrated high internal consistency in adolescent samples (Butterfield et al., 2020) and good test-retest reliability (Locke & Prinz, 2002). The current study uses reports of maternal warmth, as much of the extant literature has

primarily employed reports of maternal parenting. The Cronbach's alpha in the current sample was .85.

Psychological Control Scale- Youth Self-Report

The Psychological Control Scale-Youth Self-Report (PCS-YSR; Barber, 1996) assesses parental psychological control through an average score of 8 items, such as "my parent is less friendly to me if I don't see things like they do" and "my parent is always trying to change how I feel or think about things," using a 3-point scale from *not like my parents* to *a lot like my parents* on the extent that each item describes their parents. This scale demonstrates reliability across adolescent samples, with high Cronbach's alphas, as well as good validity and factor structure (Barber, 1996). The Cronbach's alpha in the current sample was .87.

Drinking Motives Questionnaire-Revised

The Drinking Motives Questionnaire-Revised (DMQ-R; Cooper, 1994) is a 20-item self-report scale designed to examine reasons for drinking using 5-item subscales for each motive (coping, conformity, enhancement, and social). Examples from the coping subscale are "I drink to forget my worries" or "I drink because it helps me when I feel depressed or nervous." Using a 5-point scale to report *almost never/never* to *almost always/always* how often they typically drink for that motive, items are averaged to create the raw subscale score. Proportion scores, calculated by dividing the coping subscale score by the sum of all the subscale scores, were used in the primary analyses to account for shared variance and capture the *relative* endorsement of coping motives (Blumenthal et al., 2015; Vitaliano et al., 1987); raw scores also are presented for descriptive purposes. The DMQ-R has high internal consistency and structural validity (Cooper, 1994). Further, the DMQ-R has demonstrated good validity and reliability among adolescent

samples (Kuntsche et al., 2008). The Cronbach's alpha for the raw coping motives subscale in the current sample was .89.

Procedures

Adolescents with a variety of internalizing and externalizing forms of psychopathology entered the treatment program through community-based referrals or self-referrals. Approval from a University-affiliated IRB was obtained prior to any participant contact. Parents and adolescents were informed of the assessment study upon entrance of the treatment program. Parents consented to adolescent participation and adolescents provided assent prior to enrollment. Parents provided demographic information, such as gender of their child, their own education status, and family income. Adolescents and parents completed their assessments in a private environment with trained research staff available to answer questions. Participants were entered in a lottery with a chance to win either $50 or $100. Only measures collected at the baseline assessment (i.e. pre-treatment) were examined in the current study.

Analytic Approach

Prior to running the primary analyses, the data were screened and assumptions for multiple linear regression analyses were checked. Next, preliminary analyses checked for potential covariates. A series of independent samples *t*-tests (for dichotomous categorical variables; e.g., gender), one-way univariate analyses of variance (for non-dichotomous categorical variables; e.g., race/ethnicity), and linear regressions (for continuous and ordinal variables; e.g., age, family income) examined the relations between the demographic variables and the outcome variable.

Finally, a multiple linear regression analysis was run using 7 predictors in R. Rejection, psychological control, and social anxiety were entered in the first step. The two-way interactions

(rejection * psychological control, rejection * social anxiety, psychological control * social anxiety) were entered in the second step, and the three-way interaction (rejection * psychological control * social anxiety) was entered in the last step. Proportional coping scores were entered as the outcome variable. To examine the interactions, the "probe_interaction" function was used to call simple slopes and Johnson Neyman intervals, and squared semi-partial correlations were examined as an index of the unique contribution of each predictor to the model.

CHAPTER 3

RESULTS

Data Screening

The data were screened prior to running the analyses. There was one outlier in the dataset with a predicted residual of -3.27. Analyses were conducted with and without the outlier to determine its influence. The adjusted R^2 for the overall model only increased 1% and p-values did not change in terms of statistical significance; although, the three-way interaction did approach significance (p = .052) when the outlier was removed. Nonetheless, the outlier was believed to reflect true variability in the sample, and therefore kept in the dataset. A statistically insignificant Little's MCAR test suggested that missing data in the analytical sample was likely missing completely at random. Furthermore, the percent missingness was below 10% for each predictor variable, so an available cases approach was taken.

Next, assumptions for multiple linear regression analyses were checked. The scatterplots of the predictor variables on the outcome variable indicated the variables were linearly related. The residuals of the regression were plotted with predicted values on a scatterplot, and the oval shape indicated a homoscedastic distribution of the residuals. The scatterplot of the residuals and the P-P plot indicated a normal distribution. Lastly, variance inflation factors (VIF) and tolerance values indicated the absence of multicollinearity among the predictor variables (e.g., all VIF > 5.00, tolerance > .20; O'Brien, 2007).

Preliminary and Primary Analyses

A series of independent samples *t*-tests, one-way univariate analyses of variance, and linear regressions indicated that there were no statistically significant relationships between the demographic variables and proportional coping scores; thus, no covariates were included in the

primary analyses. Specifically, proportional coping scores did not differ significantly as a function of biological sex [M_{girls} = .25, M_{boys} = .24; $t(67.77) = -0.41$, p =.685], race/ethnicity [$F(3, 70) = 1.09$, $p = .358$], age [$F(1, 92) = 3.43$, $p = .067$], or family income [$F(1, 71) = 0.02$, $p = .881$]. Zero-order correlations among primary variables found statistically significant correlations between both parenting variables, psychological control and social anxiety, proportional coping motive scores and all three primary variables. Please see Table 1.

A multiple regression analysis was conducted with 7 predictor variables. As seen in Table 2, results indicated that the first step explained 8% of the variance in coping-related drinking motives ($\Delta R^2 = .11$ F [3, 90] = 3.86, $p = .012$). The only statistically significant predictor was social anxiety; neither rejection nor psychological control added statistically significant unique variance. The second model explained 9% of the variance in coping-related drinking motives ($\Delta R^2 = .03$, F [3, 87] = 1.14, $p = .339$), though there were no statistically significant two-way interactions (all $ps > .05$). Finally, the overall model explained 11% of the variance in the drinking to cope outcome variable ($\Delta R^2 = .03$, F [1, 86] = 2.82, $p = .097$); however, the three-way interaction also failed to reach statistical significance. A post hoc power analysis with the current $N = 94$ revealed that the achieved statistical power was .64.

Since the analyses were under-powered and the omission of the outlier brought the model closer to statistical significance, two- and three-way interactions were plotted and explored with due caution. First, psychological control was plotted on a graph of rejection by coping motives (see Figure 1). Of primary note, at higher levels of psychological control, rejection evidenced a positive relation with coping motives, such that higher rejection was associated with higher levels of coping motives as compared to lower rejection.

Table 1

Correlations among Primary Variables

Variable	1	2	3	4	5	6	M (SD)	Min-Max
1. Rejection	--	.61**	.10	.21*	.14	.09	17.79 (5.29)	3 - 30
2. Psychological Control		--	.25*	.22*	.23*	.13	1.83 (.59)	1 - 2.88
3. Social Anxiety			--	.28**	.26*	-.09	11.47 (6.39)	0 - 27
4. Drinking to Cope Proportion Score				--	.61**	-.19	0.25 (.08)	0.11 - 0.45
5. Drinking to Cope Raw Score					--	.08	2.29 (1.20)	1 - 5
6. Age						--	15.73 (1.29)	11-17

Note. n= 94. * $p < .05$ ** $p < .01$

Table 2

Rejection, Psychological Control, and Social Anxiety Predicting Drinking to Cope

	Adj R^2	t (each predictor)	β	sr^2	p
Model 1	.08				.012*
Rejection		1.19	.15	.01	.238
Psychological Control		.53	.07	.00	.596
Social Anxiety		2.37	.24	.06	.020*
Model 2	.09				.028*
Rejection		-.18	-.08	.00	.857

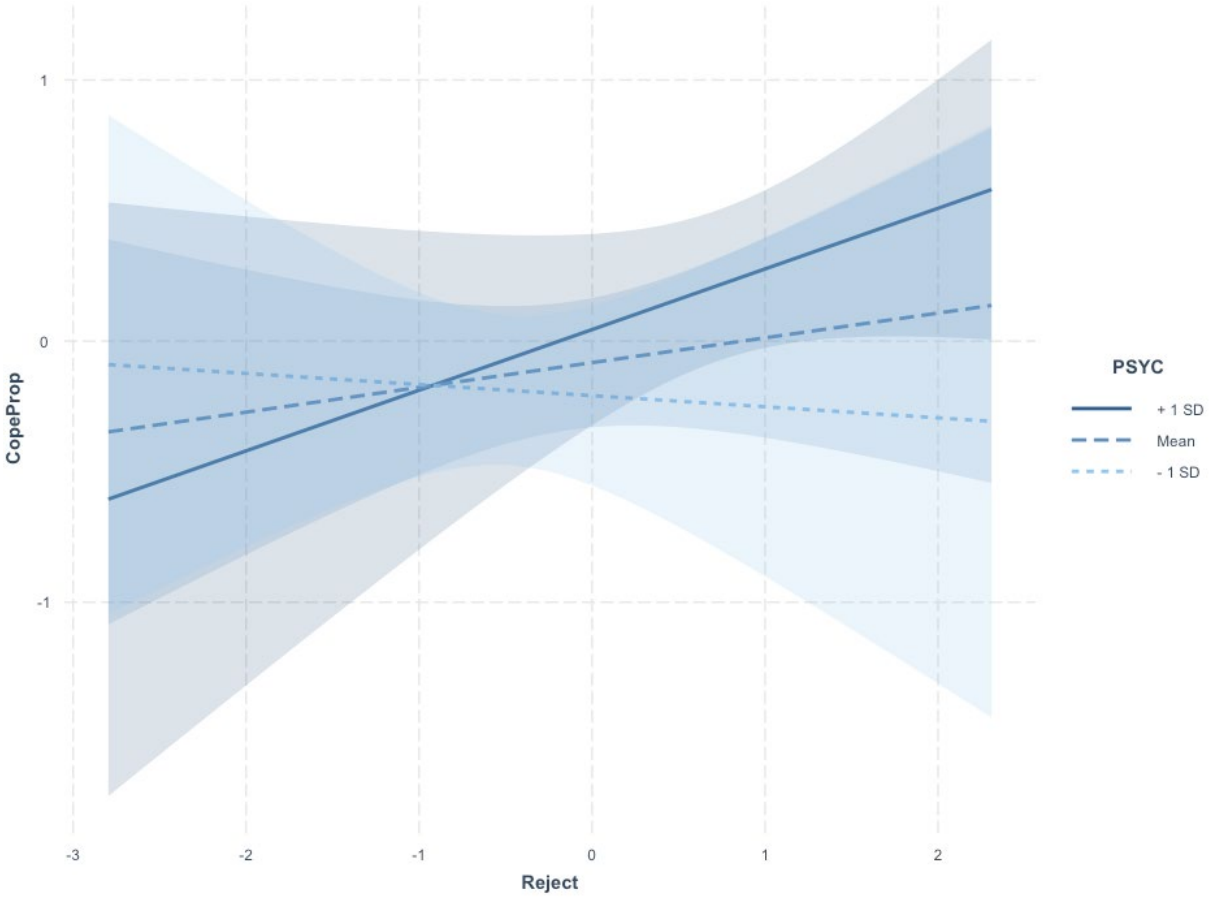
(table continues)

	Adj R^2	*t* (each predictor)	β	sr^2	*p*
Psychological Control		-1.33	-.68	.02	.189
Social Anxiety		1.37	.59	.02	.174
Reject*Psychological Control		1.38	1.04	.02	.171
Reject*Social Anxiety		-1.52	-.82	.02	.133
Psychological Control*Social Anxiety		.81	.41	.01	.420
Model 3	.11				.018*
Rejection		-1.54	-1.33	.02	.126
Psychological Control		-2.14	-2.01	.04	.036*
Social Anxiety		-1.28	-2.16	.02	.206
Reject*Psychological Control		2.14	3.36	.04	.035*
Reject*Social Anxiety		1.26	2.74	.02	.213
Psychological Control*Social Anxiety		1.83	3.82	.03	.071
Reject*Psychological Control*Social Anxiety		-1.68	-4.52	.03	.097

Note. $n = 94$. β = standardized beta weight. sr^2 = semi-partial correlation squared.

Figure 1

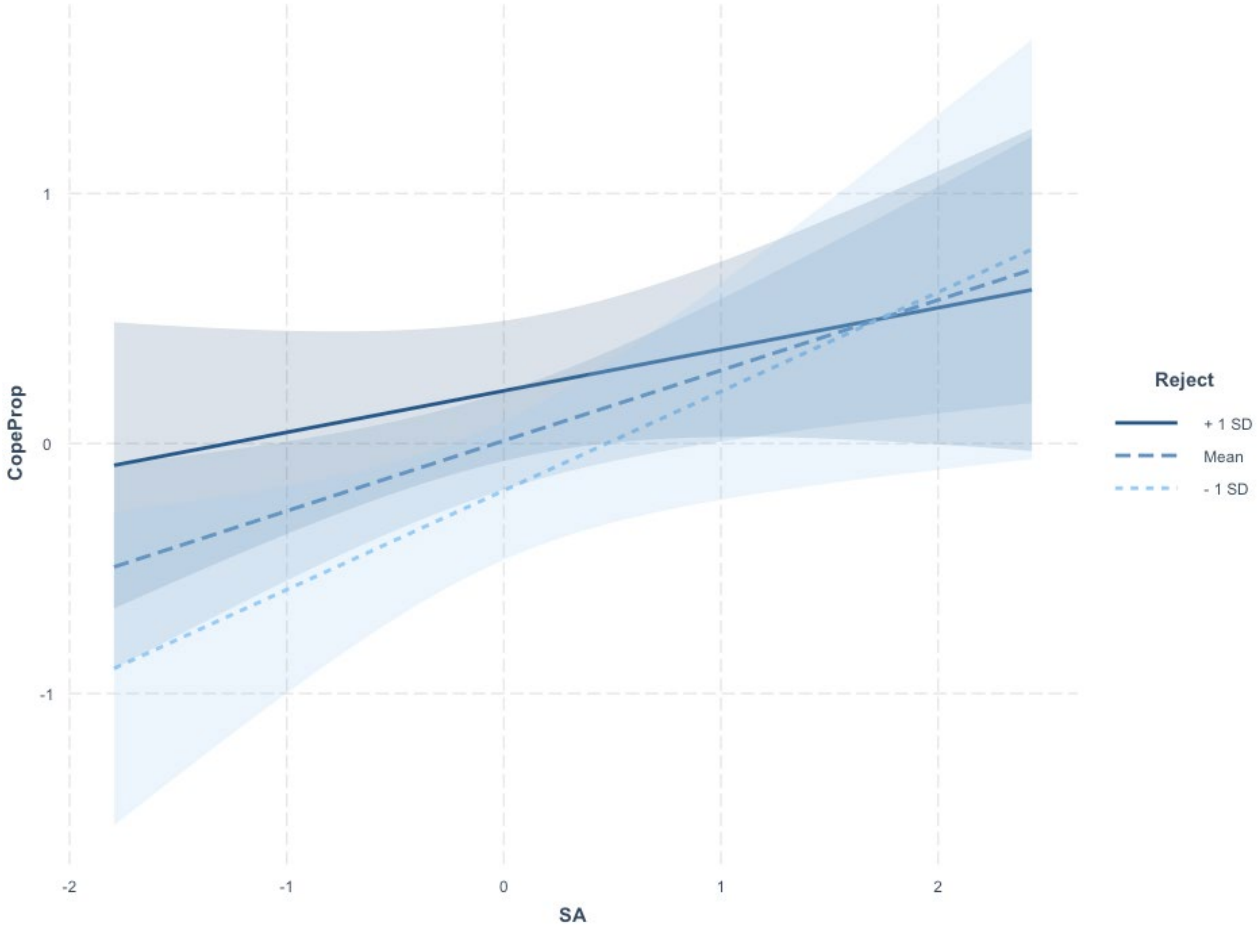
Differences in Proportional Coping Motives as a Function of Rejection and Psychological Control



Next, social anxiety was plotted on a graph of rejection by coping motives (see Figure 2). Across levels of rejection, social anxiety evidenced a positive relation with coping motives, with the strongest relation emerging among those reporting lower rejection. Though at higher levels of social anxiety, rejection did not appear to influence the relation (all were equivalently high), at lower levels of social anxiety, rejection appeared to exert a potential positive influence on coping motives (i.e. those reporting higher rejection also reported higher coping motives).

Figure 2

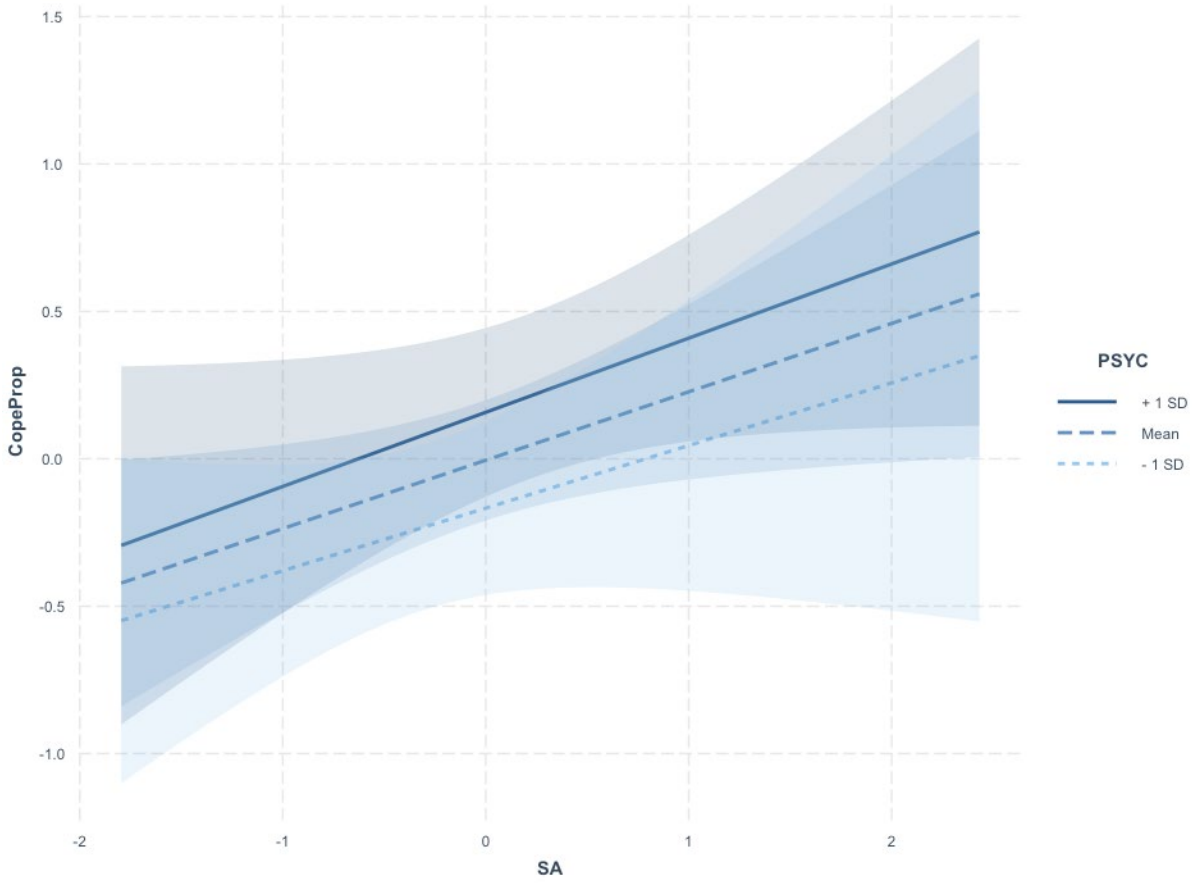
Differences in Proportional Coping Motives as a Function of Social Anxiety and Rejection



Then, psychological control was plotted on a graph of social anxiety by coping motives (see Figure 3). As expected, lower levels of psychological control and social anxiety were associated with the lowest levels of coping motives, and higher levels of psychological control and social anxiety were associated with the highest levels of coping motives. However, across levels of psychological control, social anxiety consistently evidenced a positive relation with coping motives.

Figure 3

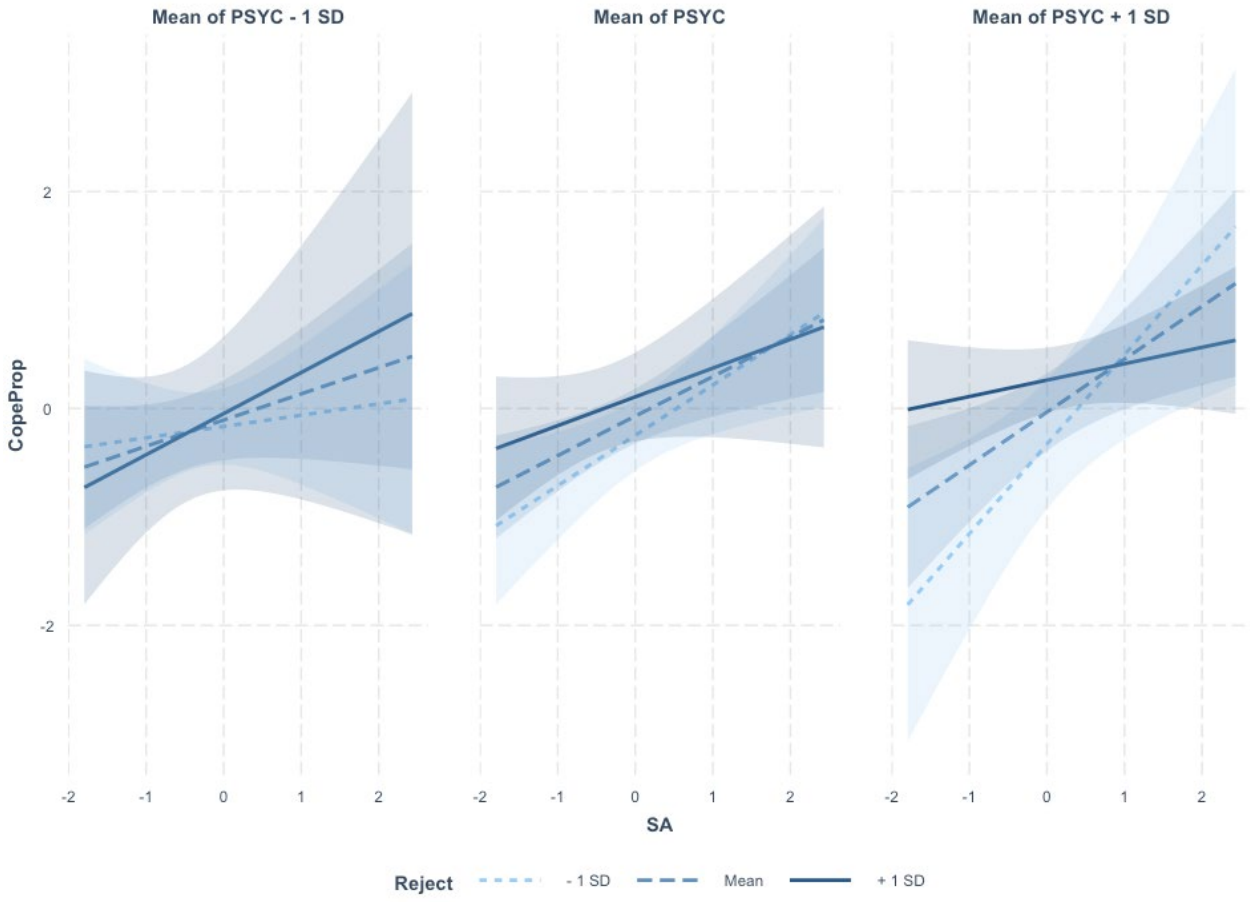
Differences in Proportional Coping Motives as a Function of Social Anxiety and Psychological Control



Lastly, the three-way interaction was plotted (see Figure 4). As expected, the positive main effect of social anxiety was observed across all parenting interactions. Among those reporting lower psychological control, higher rejection most strongly impacted the social anxiety-coping slope. Further, there appeared to be more potential impact of rejection on the social anxiety-coping slope among those also reporting high psychological control. Specifically, among those reporting higher social anxiety, higher psychological control, and *lower* rejection, the greatest reported coping motives was observed, as seen from a distinct positive slope, as well as the lowest and highest point estimates.

Figure 4

Differences in Proportional Coping Motives as a Function of Social Anxiety, Rejection, and Psychological Control



CHAPTER 4

DISCUSSION

The aim of the current study was to investigate the role of two parenting dimensions on the relation between social anxiety and propensity to endorse coping-related motives for alcohol use among adolescents. As expected, social anxiety was positively and statistically significantly related to coping motives when examined via raw scores, proportional values (i.e., relative to other motives for use), and in the final model. Further, zero-order correlations indicated a positive, statistically significant relation between proportional coping motives and both parental (maternal) rejection and psychological control; however, no other hypothesis was supported in the current study. Specifically, the data indicated that the link between social anxiety and proportional coping scores was not moderated by levels of rejection and/or psychological control. Although the results were not expected, the current study was the first to examine these variables together. Accordingly, there are several implications for future research and clinical consideration.

The current findings are consistent with the small but growing literature indicating that social anxiety is associated with coping-related drinking motives in adolescence (Blumenthal et al., 2015) as well as adulthood (Windle & Windle, 2012). Adolescence is of primary interest for further research because it is when drinkers begin to develop habitual drinking patterns (Kuntsche et al., 2010), and when the incidence of problematic social anxiety typically occurs (Lijster et al., 2017). Particularly eager for a social lubricant, socially anxious adolescent drinkers may learn to rely on alcohol to relieve anxiety symptoms, thus may be more apt to rapidly develop coping-related drinking habits. This may partially explain the speed with which alcohol use advances to alcohol use problems among socially anxious adolescents (Behrendt et

al., 2011). Collectively, this body of work underscores the potential benefit of integrating social stress and social anxiety symptoms in problematic alcohol use intervention efforts, as well as maladaptive responding to social stress, such as coping-related drinking, in efforts targeting social anxiety. For instance, promising selective personality-targeted interventions that focus on drinking motives and motive consequences before drinking patterns are established (e.g., PreVenture; Conrod et al., 2010) and universal-based prevention efforts that focus on social anxiety (NUPP-SA; Aune & Stiles, 2009) may be well suited for such integration.

The mixed results in terms of the parenting variables in the current study may be ascribed to several factors, including the methodological approach, conceptual model, and sample characteristics. Though neither rejection nor psychological control were linked to proportional coping motives in the final model, psychological control was associated with raw coping motive scores, and both were linked to proportional coping motives at the zero-order level. This is consistent with the limited body of work that has linked rejection and psychological control to problematic drinking among adolescents (e.g., Donaldson et al., 2016; Fisher et al., 2006).

The post-hoc power analysis demonstrated that the interactions were under-powered. Future studies seeking to test these relations in an a priori manner should be prepared to collect larger sample sizes to more adequately assess the potential interactions. Given that the current study is the first assessment of these relations together, the patterns in the data were explored. It appeared that high psychological control and high rejection may indeed be related to problems; though at higher social anxiety levels, rejection no longer appeared to exert an impact on coping-related motives. Further, observed patterns indicated that psychological control and social anxiety may have unique additive, rather than interactive, effects on coping-related motives. Lastly, the combination of low rejection and high psychological control among those with high

social anxiety appeared to be related to the highest coping-related motives. Importantly, none of the interactions were statistically significant, and caution must be taken in further interpreting these findings until corroborated by other research.

One key issue to consider regarding the selected parenting variables is the muddled literature in terms of construct definition, measurement tools (e.g., inconsistent labeling and varied identification of parental warmth/rejection and psychological control), and analytic technique. For example, various studies purport to examine parental warmth/rejection as defined here, yet employ a diversity of measures that may also capture additional characteristics (e.g., aspects of control; e.g., Rohner & Khaleque, 2010); similarly, aspects of psychological control often are combined with examples of behavioral control and/or referred to as control broadly (Kakihara et al., 2010). Greater standardization of terminology across the literature is needed to better delineate construct-specific effects. Further, many studies either examine only one dimension of parenting in isolation (e.g., Chen et al., 2019), or intentionally combine multiple characteristics into a single variable (e.g., Barber & Armistead, 2003). The current findings highlight how interpretations can vary when dimensions are considered in isolation or in combination; future research employing more advanced statistical approaches (e.g., via a latent class analysis to identify distinct parenting groups; Vermunt & Magidson, 2004) will be important in forwarding this literature.

Another important issue to note regarding the parenting variables is the current study examined *maternal* rejection (and not paternal rejection), although a measure of *parental* psychological control was used. This may have obscured the results, as some adolescents may have reported on mothers, some on fathers, and some on both. Future studies should explicitly ask adolescents to report on either maternal or paternal parenting exclusively, as studies suggest

that parenting may be differentially linked with adolescent behavior, depending on the parent's gender (Casas et al., 2006). Finally, the current study examined only single source, child-report data. While data derived from the offspring perspective can be particularly important in understanding psychological and behavioral difficulties among youth (Holmbeck et al., 2002), future research should seek to include multiple sources of information, and parent report of parenting in particular should be incorporated alongside child-report data. Alternatively, observational studies among child-parent dyads (e.g., laboratory-based discussion tasks; Barrett et al., 2005) may best capture the degree to which parents express rejection or psychological control in real time.

The current study further investigated parenting dimensions as moderators of the social anxiety-coping motives link; however, a mediational model may be more fitting. In this view, rather than primarily impacting the direct relation, parenting variables may influence coping-related drinking motives indirectly through the experience of social anxiety. Indeed, the parent–child relationship has been repeatedly identified as a key factor in relation to the development and/or maintenance of social anxiety (Rapee, 1997). Further, extant literature has directly linked certain parenting dimensions, such as rejection and control, with child social anxiety symptoms (Festa & Ginsburg, 2011; Murray et al., 2009). However, the current data were cross-sectional, and a test of moderation was deemed a reasonable first step; future researchers should conduct longitudinal studies to investigate these potential mediational relations. Further, more multifaceted structural equation modeling may better depict actual simultaneous and bidirectional effects of parent and offspring behavior.

Several other factors also should be considered in future studies seeking to explore the potentially complex relations among parenting, social anxiety, and alcohol use among

adolescents. For instance, factors such as parental alcohol use problems (Chalder et al., 2006), drinking motives (Cloutier et al., 2019), and social anxiety (Lieb et al., 2000) all may play an important role in the strength and nature of these relations. Additionally, other important social influences relevant to substance use behaviors broadly include peers (Kuntsche & Stewart, 2009) and sibling relationships (Windle, 2000), and should be directly considered in future work. The current study further conflated sex and gender, and assessed gender as a binary, 'male' or 'female', variable. To avoid misgendering and ensure representation of high risk, yet understudied youth (Newcomb et al., 2012; Roberts et al., 2011), a couple of approaches may be taken (Cloutier et al., 2021). For example, a simple two-step method allows participants to indicate both biological sex (i.e., male, female, intersex, something else) and gender identity (i.e., man, woman, non-binary, genderqueer, something else), with open-ended "something else" options to facilitate accurate and inclusive data collection. Finally, pubertal status/timing may be a better measurement to replace age, given that younger age at menarche is a risk factor for onset of alcohol use prior to age 15 years (Verhoef et al., 2014).

Findings also should be considered in terms of several important sample characteristics.

First, the current sample included adolescents between the ages of 11-17 years; although, the mean age was 15.73 years. The negative skew in age is expected given the typical age of alcohol initiation is around 15 years (Flory et al., 2004). However, younger adolescents may be more sensitive to parent impact (Spano et al., 2012), and research suggests that younger adolescent drinkers are at a greater risk for the development of alcohol use problems. For instance, adolescents who begin drinking alcohol before age 15 are significantly more likely to experience negative alcohol consequences later in life than those who initiate use after age 15 (Grant & Dawson, 1997). Older adolescents, like the majority of those in the current sample,

may be reporting on more normative experimentation, whilst younger adolescents may be reporting on more risk-related, problematic drinking. Future research may benefit from examining a sample of younger adolescent drinkers (e.g., those age 15 and younger).

Moreover, the sample was relatively wealthy and overwhelmingly White. One study found differences in drinking motives across socioeconomic levels, finding adolescents from higher socioeconomic backgrounds were more likely to drink to increase confidence, whereas adolescents from lower socioeconomic backgrounds were more likely to drink to cope with low mood (Stapinski et al., 2016). Adolescents from disadvantaged backgrounds may experience more daily stressors (Reiss et al., 2019), poorer social relationships (Li et al., 2020), and worse family relations (Conger et al., 2010) than their peers from high socioeconomic backgrounds. Importantly, research suggests that social support is linked to reducing risky drinking behaviors by helping drinkers cope with stress better (Humphreys et al., 1999). Furthermore, several studies have identified racial/ethnic differences in drinking patterns among adolescents (Substance Abuse & Mental Health Services Administration, 2010). Overall, the lack of socioeconomic and racial/ethnic diversity in this study is a critical issue that must be taken into consideration when interpreting the findings.

Finally, while the adolescents in the current sample were entering an in-patient treatment program, the descriptive data for the primary variables were similar to that found in community samples. The social anxiety scores as measured by the RCADS in the current study (M = 11.47; SD = 6.39) were comparable to social anxiety scores from a large sample of public and private school adolescents (M = 11.68, SD = 4.74 for boys; M = 12.27, SD = 5.00 for girls; Chorpita et al., 2000). The raw coping scores as measured by the DMQ-R in the current sample (M = 2.29, SD = 1.20) were comparable to coping motive scores in samples of community-recruited

adolescents (e.g., *M* = 2.28, *SD* = 1.13; Blumenthal et al., 2015), indicating that coping-motivated drinking wasn't especially prevalent in this clinical sample. Finally, it is also worth noting child-reported rejection and psychological control observed in the current study were consistent with that observed in community-recruited samples (e.g., Barber et al., 2005).* Additionally, it was unexpected that 175 adolescents reported not drinking alcohol. It should be noted that some adolescents revealed their resistance/unhappiness about entering the in-patient treatment facility. Perhaps fear or distrust of the facility affected adolescents' true disclosure of drinking experiences or parenting dimensions. To avoid self-report error, future studies may choose to employ alternative methodological techniques. An examination of families presenting with more severe problems, such as family therapy environment, and youth presenting with social anxiety disorder and/or an alcohol use disorder may be more relevant for the proposed analyses and serve as an interesting extension.

* Barber and colleagues (2005) used the CRPBI though with a different scoring method. After using the same scoring method, maternal warmth scores in the current sample (M = 2.19, SD = .51) were comparable to maternal warmth scores in the study (M = 2.49, SD = .49). The study also measured psychological control using the PCS-YSR, though used reports on mothers and fathers. After averaging parenting scores, psychological control scores from the current sample (M = 1.83, SD = .59) were comparable to parental psychological control from the study (M = 1.51, SD = .48).

APPENDIX A

R-CODES

```
> Analytical_sample_4_8 <- read_sav("Desktop/Thesis/Analytical sample 4.8.sav")
> View(Analytical_sample_4_8)
> fit1 <- lm(Cope_Prop ~ Reject + PSYC + SA, Analytical_sample_4_8)
> summary(fit1)
> fit2a <- lm(Cope_Prop ~ Reject*PSYC, Analytical_sample_4_8)
> summary(fit2a)
> fit2b <- lm(Cope_Prop ~ Reject*SA, Analytical_sample_4_8)
> summary(fit2b)
> fit2c <- lm(Cope_Prop ~ PSYC*SA, Analytical_sample_4_8)
> summary(fit2c)
> fit3 <- lm(Cope_Prop ~ Reject*PSYC*SA, Analytical_sample_4_8)
> summary(fit3)
```

APPENDIX B

ADDITIONAL SAMPLE DESCRIPTIVES

Factor	Values	% Sample	Coping motives (raw) M(SD)	Coping motives (proportional) M(SD)	Social Anxiety M(SD)	Rejection M(SD)	Psychological Control M(SD)
Gender/Sex	Girl	53.30	2.09(1.04)	.25(.09)	11.53(6.66)	17.90(5.42)	1.83(.62)
	Boy	46.70	2.39(1.31)	.24(06)	11.63(5.91)	17.40(5.52)	1.82(.56)
Race/Ethnicity	White	89.2	2.21(1.17)	.24(.07)	11.33(6.23)	17.53(5.22)	1.82(.58)
	Black/African American	0					
	Asian American	0					
	Hispanic/Latinx	4.1	1.47(64)	.20(.06)	10.33(7.77)	15.33(4.51)	1.83(.63)
	Native American	1.4	5	.33	16	25	2.5
	Other	5.4	2.70(60)	.27(.09)	12.00(4.55)	17.00(7.44)	1.59(.87)
Grade	5-6	1.1	1.60	.27	14	13	1.25
	7-8	5.3	2.44(1.31)	.33(.11)	14.40(2.79)	15.40(3.05)	1.80(.34)
	9-10	27.6	2.28(1.34)	.26(.06)	11.50(6.68)	17.73(5.00)	1.80(.60)
	11-12	43.6	2.36(1.24)	.23(.07)	11.66(6.67)	18.37(5.96)	1.96(.55)
MH Hospitalization	Yes	47.3	2.58(1.28)	.26(.07)	12.63(6.88)	18.60(5.73)	2.03(.58)
	No	52.7	2.09(1.20)	.24(.08)	11.21(5.93)	17.08(5.16)	1.73(.52)
Inpatient SU Treatment	Yes	11.0	2.38(1.36)	.25(.08)	11.25(6.18)	14.13(6.47)	1.64(.32)
	No	89.0	2.32(1.26)	.25(.08)	11.94(6.51)	18.35(5.16)	1.91(.58)
Outpatient Treatment	Yes	98.6	2.34(1.25)	.25(.08)	12.01(6.33)	17.79(5.49)	1.86(.56)
	No	1.4	1	.14	2	18	2.63
Psychotropic Medication	0	31.1	1.85(1.06)	.23(.06)	9.61(4.77)	18.83(4.97)	1.95(.56)
	1	23.0	2.61(1.27)	.25(.09)	14.24(7.44)	19.18(6.53)	1.99(.56)

(table continues)

Factor	Values	% Sample	Coping motives (raw) M(SD)	Coping motives (proportional) M(SD)	Social Anxiety M(SD)	Rejection M(SD)	Psychological Control M(SD)
	≥ 2	45.9	2.49(1.31)	.27(.08)	12.24(6.47)	16.41(5.00)	1.76(.57)
Family Annual Income	≤ $100,000	24.2	2.19(1.11)	.25(.08)	11.55(6.04)	19.10(5.30)	1.96(.56)
	> $100,000	75.8	2.39(1.31)	.25(08)	12.13(6.56)	17.40(5.50)	1.85(.56)
Parent Marital Status	Single	6.7	1.64(.38)	.20(.04)	7.20(6.06)	18.00(4.42)	1.60(.45)
	Married	58.7	2.31(1.27)	.25(.08)	11.20(6.90)	17.48(5.78)	1.82(.59)
	Divorced/Separated	29.4	2.50(1.30)	.26(.08)	13.77(5.33)	18.05(5.13)	1.94(.51)
	Other	5.3	2.45(1.46)	.27(.11)	13.00(3.16)	19.25(5.56)	2.28(.56)

Note. MH: mental health. SU: substance use. Outpatient Treatment: includes either intensive or any number of therapists

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